

CLAIMS

1. An image reproducing and forming apparatus comprising:
a recording head configured to eject liquid droplets of at
least one color and capable of bidirectional recording; and
a controller configured to control an amount of liquid
adhering to a recording paper so as to reduce color difference
occurring in the bidirectional recording.

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2. The image reproducing and forming apparatus of claim 1,
wherein the controller has a determination unit that determines
whether an object to be output is text, and wherein the
controller does not perform a process of reducing the color
difference when the object to be output is text.

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3. The image reproducing and forming apparatus of claim 1,
wherein the controller has a determination unit that determines
an object to be output and the number of colors used in the
bidirectional recording, and wherein the controller does not
perform a process of reducing the color difference when the
object to be output is not text and when the number of colors is
one.

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4. The image reproducing and forming apparatus of claim 1,
wherein the controller controls the amount of liquid adhesion
through controlled gamma correction using a controlled gamma
5 value adjusted so as to reduce the color difference.

5. The image reproducing and forming apparatus of claim 4,
wherein the controller has a selector that selects either an
10 ordinary gamma correction using an ordinary gamma value or the
controlled gamma correction for reducing color difference using
the controlled gamma value.

15 6. The image reproducing and forming apparatus of claim 5,
wherein the controlled gamma value is a product of the ordinary
gamma value and a factor K, wherein K is set in the range from
0.35 to 0.65.

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7. The image reproducing and forming apparatus of claim 2 or 3,
wherein the controller is configured to selectively perform
either a controlled gamma correction for controlling the amount
of liquid adhesion to reduce the color difference in
25 bidirectional recording or an ordinary gamma correction not

addressed to reduction of the color difference, based on the determination result of the determination unit.

- 5 8. The image reproducing and forming apparatus of claim 7, wherein the controller uses a controlled gamma value to perform the controlled gamma correction, and uses an ordinary gamma value to perform the ordinary gamma correction.

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9. The image reproducing and forming apparatus of claim 8, wherein the controlled gamma value is a product of the ordinary gamma value and a factor K, wherein K is set in the range from 0.35 to 0.65.

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10. The image reproducing and forming apparatus of claim 1, wherein when duplexing is performed in the bidirectional recording, the controller further controls the amount of liquid
20 adhering to the recording paper using a factor M, wherein M is less than 1.0.

11. A printer driver installed in a computer and configured to
25 process image data to be supplied to an image reproducing and

forming apparatus capable of bidirectional recording using a recording head for ejecting liquid droplets of at least one color onto a recording medium, the printer driver comprising:

5 a control unit configured to control an amount of liquid adhering to the recording medium so as to reduce color difference occurring in the bidirectional recording.

12. The printer driver of claim 11, further comprising:

10 a determination unit configured to determine whether an object to be output is text, wherein the control unit does not perform a process of reducing the color difference when the object to be output is text.

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13. The printer driver of claim 11, further comprising:

a determination unit configured to determine an object type and the number of colors used in image data, and wherein the control unit does not perform a process of reducing the color
20 difference when the object type is not text and when the number of colors is one.

14. The printer driver of claim 11, wherein the control unit

25 includes a gamma correction unit configured to selectively

perform a controlled gamma correction using a controlled gamma value adjusted so as to reduce the color difference or an ordinary gamma correction using an ordinary gamma value.

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15. The printer driver of claim 14, wherein the controlled gamma value is a product of the ordinary gamma value and a factor K, wherein K is set in the range from 0.35 to 0.65.

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16. The printer driver of claim 15, wherein when the image data designates duplexing, the control unit uses a second controlled gamma value obtained by multiplying the product by a factor M, wherein M is less than 1.0.

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17. The printer driver of claim 12 or 13, wherein the control unit includes a gamma correction unit configured to selectively perform either a controlled gamma correction for controlling the amount of liquid adhesion or an ordinary gamma correction not for
20 controlling the amount of liquid adhesion, based on either the determination result of the determination unit or an externally supplied instruction.

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18. The printer driver of claim 17, wherein the control unit uses a controlled gamma value to perform the controlled gamma correction, and uses an ordinary gamma value to perform the ordinary gamma correction.

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19. The printer driver of claim 18, wherein the controlled gamma value is a product of the ordinary gamma value and a factor K, wherein K is set in the range from 0.35 to 0.65.

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20. The printer driver of claim 19, wherein when the image data designates duplexing, the control unit uses a second controlled gamma value obtained by multiplying the product by a factor M, wherein M is less than 1.0.

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21. A data processing apparatus for processing image data to be supplied to an image reproducing and forming apparatus capable of bidirectional recording using a recording head for ejecting liquid droplets of at least of one color onto a recording medium; the data processing apparatus comprising:

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a control unit configured to cause the image data to be processed so as to control an amount of liquid adhesion to the recording medium in the image reproducing and forming apparatus

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to reduce color difference occurring in the bidirectional recording.

5 22. The data processing apparatus of claim 21, wherein the control unit includes a gamma correction unit configured to selectively perform a controlled gamma correction for reducing color difference in the bidirectional recording or an ordinary gamma correction not addressed to reduction of color difference
10 on the image data.

23. An image reproducing and forming apparatus comprising:
a transport mechanism configured to convey a recording
15 medium by electrostatic attraction;
an image recording unit configured to form an image on the recording medium by ejecting liquid droplets onto the recording medium; and
a control unit configured to control the amount of liquid
20 adhesion to the recording medium so as to prevent leakage of electric charge from the recording medium.

24. The image reproducing and forming apparatus of claim 23,
25 wherein the control unit includes a gamma correction processing

unit that controls the amount of liquid adhesion to the recording medium through gamma correction.

- 5 25. The image reproducing and forming apparatus of claim 24,
wherein the gamma correction processing unit performs selectively
first gamma correction for preventing leakage of electric charge
and second gamma correction not addressed to prevention of
leakage of electric charge.

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26. The image reproducing and forming apparatus of claim 24,
wherein the gamma correction processing unit has a first
multiplier for multiplying an ordinary gamma value by factor K
15 ($K < 1.0$) to produce a controlled gamma value used to control the
amount of liquid adhesion to the recording medium.

27. The image reproducing and forming apparatus of claim 25,
20 wherein the gamma correction unit performs the second gamma
correction using an ordinary gamma value, and performs the first
gamma correction using a controlled gamma value obtained by
multiplying the ordinary gamma value by factor K ($K < 1.0$).

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28. The image reproducing and forming apparatus of claim 26 or 27, wherein the factor K is selected according to an object type of image data to be recorded.

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29. The image reproducing and forming apparatus of claim 26 or 27, wherein the value of the factor K is varied depending on at least one of an environmental condition and the amount of data output in a page.

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30. The image reproducing and forming apparatus of claim 26, wherein the gamma correction processing unit has a second multiplier that multiplies the controlled gamma value by factor M ($M < 1.0$) to produce a second controlled gamma value used to prevent leakage of electric charge when conducting duplex printing.

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20 31. The image reproducing and forming apparatus of claim 27, wherein the gamma correction unit performs the first gamma correction using a second controlled gamma value obtained by multiplying the controlled gamma value by factor M ($M < 1.0$) when conducting duplex printing.

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32. A printer driver installed in a computer and configured to process image data to be supplied to an image reproducing apparatus that reproduces an image on a recording medium by
5 ejecting liquid droplets onto the recording medium transported by electrostatic attraction, the printer driver comprising:

a gamma correction processing unit that performs gamma correction on the processed image data to prevent leakage of electric charge from the recording medium transported by the
10 electrostatic attraction.

33. The printer driver of claim 32, wherein the gamma correction processing unit performs selectively first gamma correction for
15 preventing leakage of electric charge and second gamma correction not addressed to prevention of leakage of electric charge.

34. The printer driver of claim 32, wherein the gamma correction
20 processing unit performs the gamma correction for preventing leakage of electric charge using a controlled gamma value obtained by multiplying an ordinary gamma value by factor K ($K < 1.0$).

35. The printer driver of claim 33, wherein the gamma correction unit performs the second gamma correction using an ordinary gamma value, and performs the first gamma correction using a controlled gamma value obtained by multiplying the ordinary gamma value by
5 factor K ($K < 1.0$).

36. The printer driver of claim 34 or 35, wherein the factor K is selected according to an object type of the processed image data.
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37. The printer driver of claim 34 or 35, wherein the value of the factor K is varied depending on the amount of the image data to be output in a page.
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38. The printer driver of claim 34, wherein the gamma correction processing unit performs the gamma correction for preventing leakage of electric charge using a second controlled gamma value
20 obtained by multiplying the controlled gamma value by factor M ($M < 1.0$) when the printer driver generates a print command for duplex printing.

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39. The printer driver of claim 35, wherein the gamma correction unit performs the first gamma correction using a second controlled gamma value obtained by multiplying the first controlled gamma value by factor M ($K < 1.0$) when the printer
5 driver generates a print command for duplex printing.